STN SEARCH **09/943,857**

10/7/04

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=> file .nash

=> s (lipase or phospholipase or lipolytic enzyme) and rugosa
L1          175 FILE MEDLINE
L2         1264 FILE CAPLUS
L3          907 FILE SCISEARCH
L4          219 FILE LIFESCI
L5          574 FILE BIOSIS
L6          403 FILE EMBASE

TOTAL FOR ALL FILES
L7         3542 (LIPASE OR PHOSPHOLIPASE OR LIPOLYTIC ENZYME) AND RUGOSA

=> s l7 and (nucleic acid or dna or cdna or gene)
TOTAL FOR ALL FILES
L14         160 L7 AND (NUCLEIC ACID OR DNA OR CDNA OR GENE)

=> s l14 not 2002-2004/py

TOTAL FOR ALL FILES
L21         121 L14 NOT 2002-2004/PY

=> dup rem l21
PROCESSING COMPLETED FOR L21
L22          59 DUP REM L21 (62 DUPLICATES REMOVED)

=> d ibib abs 1-59

L22  ANSWER 1 OF 59  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         2001:654734  CAPLUS
DOCUMENT NUMBER:          135:222353
TITLE:                    Novel lipases having altered substrate
                          specificity, methods for their preparation, and their
                          use in biocatalytic applications
INVENTOR(S):              Brocca, Stefania; Bornscheuer, Uwe T.; Pleiss,
                          Juergen; Schmid, Rolf D.; Schmid, Ulrike; Schmitt,
                          Jutta
PATENT ASSIGNEE(S):       Unilever N.V., Neth.; Unilever PLC
SOURCE:                   Eur. Pat. Appl., 33 pp.
                          CODEN: EPXXDW
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.           KIND   DATE        APPLICATION NO.         DATE
     ---------------      ----   --------    --------------------    --------
     EP 1130100           A1     20010905    EP 2001-200375          20010202
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO
PRIORITY APPLN. INFO.:                       EP 2000-200513      A   20000214
AB   The invention provides the DNA sequence of a synthetic
     gene encoding Candida rugosa lipase 1, as well
     as the corresponding amino acid sequence.  As compared to the natural
     gene encoding the C. rugosa lipase, the
     synthetic gene differs in that all 19 CTG codons coding for
     serines have been replaced with TCT or TCC, thereby resulting in better
     codon usage and hence a higher prodn. yield of active lipase.
     The synthetic gene was found to be a suitable starting point for
     investigating further mutations in the natural gene which would
     result in either an altered substrate activity of the lipase
     upon expression and secretion or a further improved codon usage with a
     concomitant higher yield of lipase.  Thus, the invention also
     provides for variants of lipase enzymes exhibiting an altered
     substrate specificity and/or a higher prodn. level as compared to the
     parent enzyme.  A typical and preferred characteristic of altered
     substrate specificity is the capacity of hydrolyzing a larger proportion
     of higher fatty acid esters from an oil, notably C16-C18 fatty acid
     esters, such as palmitates and stearates.
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WEST Search History

Hide Items | Restore | Clear | Cancel

DATE: Thursday, October 07, 2004

Hide?	Set Name	Query	Hit Count
		DB=USPT,USOC,EPAB,JPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ	
☐	L11	L10 and l3	48
☐	L10	L9 or l8 or l7 or l6	2625
☐	L9	435/198	808
☐	L8	435/197	441
☐	L7	435/196	955
☐	L6	435/195	873
☐	L5	435/195, 196, 197, 198	0
☐	L4	(435/195-198)!	3
☐	L3	L2 and (gene or dna or cdna or nucleic acid)	127
☐	L2	(candida rugosa or candida cylindracea) same (lipase or phospholipase or liplytic enzyme)	633
☐	L1	(candida rugosa or candida cylindracea) and (lipase or phospholipase or liplytic enzyme)	671

END OF SEARCH HISTORY

Hit List

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Search Results - Record(s) 1 through 20 of 48 returned.

☐ 1. Document ID: US 6706500 B2

Using default format because multiple data bases are involved.

L11: Entry 1 of 48 File: USPT Mar 16, 2004

US-PAT-NO: 6706500
DOCUMENT-IDENTIFIER: US 6706500 B2

TITLE: Process for the preparation of L-menthol

DATE-ISSUED: March 16, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gatfield; Ian-Lucas	Hoxter			DE
Hilmer; Jens-Michael	Hoxter			DE
Bornscheuer; Uwe	Greifswald			DE
Schmidt; Rolf	Stuttgart			DE
Vorlova ; Sandra	Stuttgart			DE

US-CL-CURRENT: 435/132; 435/155, 435/198, 435/921, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC

☐ 2. Document ID: US 6670189 B2

L11: Entry 2 of 48 File: USPT Dec 30, 2003

US-PAT-NO: 6670189
DOCUMENT-IDENTIFIER: US 6670189 B2
** See image for Certificate of Correction **

TITLE: Fumonisin detoxification compositions and methods

DATE-ISSUED: December 30, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Duvick; Jonathan	Des Moines	IA		
Maddox; Joyce R.	Des Moines	IA		
Rood; Tracy A.	Johnston	IA		
Wang; Xun	Johnston	IA		

Bowen; Benjamin A.	Des Moines	IA
Gilliam; Jacob T.	Norwalk	IA

US-CL-CURRENT: 435/468; 800/279

ABSTRACT:

Methods for identifying organisms capable of degrading fumonisin. Fumonisin can be incorporated into culture medium for selection of organisms resistant to fumonisin and/or capable of growing on fumonisin as a sole carbon source. Using this method, several organisms have been identified. These organisms can be used to isolate the enzymes and the genes responsible for conferring fumonisin-resistance. The gene can be cloned and inserted into a suitable expression vector so that the protein can be further characterized. Additionally, the DNA encoding for fumonisin degrading enzymes can be used to transform plant cells normally susceptible to Fusarium or other toxin-producing fungus infection. Plants can be regenerated from the transformed plant cells. In this way, a transgenic plant can be produced with the capability of degrading fumonisin, as well as with the capability of producing the degrading enzymes. Methods for detoxification in grain, grain processing, silage, food crops and in animal feed and rumen microbes are also disclosed.

10 Claims, 6 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 6

☐ 3. Document ID: US 6638758 B2

L11: Entry 3 of 48 File: USPT Oct 28, 2003

US-PAT-NO: 6638758
DOCUMENT-IDENTIFIER: US 6638758 B2

TITLE: Process for the enzymatic resolution of lactams

DATE-ISSUED: October 28, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hansen, Jr.; Donald W.	Skokie	IL		
Trivedi; Mahima	Glenview	IL		
Gapud; Rolando E.	Chicago	IL		
Ng; John S.	Chicago	IL		
Awasthi; Alok K.	Skokie	IL		
Wang; Ping T.	Manchester	MO		

US-CL-CURRENT: 435/280; 435/117, 435/120, 435/121

ABSTRACT:

A method of separating enantiomeric lactam esters. The lactam esters are contacted

with a biocatalyst, such as an enzyme or a microorganism, in a solution wherein only one enantiomer is selectively hydrolyzed to give the optically active isomer of the corresponding acid. The hydrolysis product is then separated from the unreacted lactam esters. The enzyme is then recycled for reuse in the next enzymatic resolution. The undesired isomer is also racemized and reused in the next enzymatic resolution.

1 Claims, 0 Drawing figures
Exemplary Claim Number: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. De

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☐ 4. Document ID: US 6596520 B1

L11: Entry 4 of 48 File: USPT Jul 22, 2003

US-PAT-NO: 6596520
DOCUMENT-IDENTIFIER: US 6596520 B1

TITLE: Immobilizing lipase by adsorption from a crude solution onto nonpolar polyolefin particles

DATE-ISSUED: July 22, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Friedrich; Thomas	Darmstadt			DE
Sturmer; Rainer	Rodersheim-Gronau			DE

US-CL-CURRENT: 435/135; 435/128, 435/132, 435/134, 435/136, 435/155, 435/180, 435/198, 435/280, 435/874, 435/875

ABSTRACT:

Immobilized lipase is prepared by adsorbing lipase from a crude lipase solution onto polyolefin particles such as polypropylene particles which are nonpolar. The crude solution may be a cell-free culture broth. Lipase sources include Pseudomonas burkholderia and Pseudomonas aeruginosa. Uses of the immobilized lipase include enantioselective conversion of substrates such as enantioselective acylating or hydrolyzing.

10 Claims, 0 Drawing figures
Exemplary Claim Number: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. De

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☐ 5. Document ID: US 6573075 B1

L11: Entry 5 of 48 File: USPT Jun 3, 2003

US-PAT-NO: 6573075

DOCUMENT-IDENTIFIER: US 6573075 B1

TITLE: Fumonisin detoxification compositions and methods

DATE-ISSUED: June 3, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Duvick; Jonathan	Des Moines	IA		
Wang; Xun	San Diego	CA		

US-CL-CURRENT: 435/196; 435/197, 536/23.2

ABSTRACT:

Methods for identifying organisms capable of degrading fumonisin. Fumonisin can be incorporated into culture medium for selection of organisms resistant to fumonisin and/or capable of growing on fumonisin as a sole carbon source. Using this method, several organisms have been identified. These organisms can be used to isolate the enzymes and the genes responsible for conferring fumonisin-resistance. The gene can be cloned and inserted into a suitable expression vector so that the protein can be further characterized. Additionally, the DNA encoding for fumonisin degrading enzymes can be used to transform plant cells normally susceptible to Fusarium or other toxin-producing fungus infection. Plants can be regenerated from the transformed plant cells. In this way, a transgenic plant can be produced with the capability of degrading fumonisin, as well as with the capability of producing the degrading enzymes. Methods for detoxification in grain, grain processing, silage, food crops and in animal feed and rumen microbes are also disclosed.

3 Claims, 6 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 6

☐ 6. Document ID: US 6514749 B1

L11: Entry 6 of 48 File: USPT Feb 4, 2003

US-PAT-NO: 6514749
DOCUMENT-IDENTIFIER: US 6514749 B1
**** See image for Certificate of Correction ****

TITLE: Fumonisin detoxification compositions and methods

DATE-ISSUED: February 4, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Duvick; Jonathan	Des Moines	IA		
Maddox; Joyce R.	Omaha	NE		
Rood; Tracy A.	Johnston	IA		

US-CL-CURRENT: 435/254.1; 435/135, 435/183, 435/196, 435/197, 435/252.1, 435/267, 435/47, 47/1.01R

ABSTRACT:

Methods for identifying organisms capable of degrading fumonisin. Fumonisin can be incorporated into culture medium for selection of organisms resistant to fumonisin and/or capable of growing on fumonisin as a sole carbon source. Using this method, several organisms have been identified. These organisms can be used to isolate the enzymes and the genes responsible for conferring fumonisin-resistance. The gene can be cloned and inserted into a suitable expression vector so that the protein can be further characterized. Additionally, the DNA encoding for fumonisin degrading enzymes can be used to transform plant cells normally susceptible to Fusarium or other toxin-producing fungus infection. Plants can be regenerated from the transformed plant cells. In this way, a transgenic plant can be produced with the capability of degrading fumonisin, as well as with the capability of producing the degrading enzymes. Methods for detoxification in grain, grain processing, silage, food crops and in animal feed and rumen microbes are also disclosed.

5 Claims, 6 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 6

☐ 7. Document ID: US 6495357 B1

L11: Entry 7 of 48 File: USPT Dec 17, 2002

US-PAT-NO: 6495357
DOCUMENT-IDENTIFIER: US 6495357 B1

TITLE: Lipolytic enzymes

DATE-ISSUED: December 17, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Fuglsang; Claus Crone	Nivaa			DK
Okkels; Jens Sigurd	Frederiksberg			DK
Petersen; Dorte Aaby	Birkerod			DK
Patkar; Shamkant Anant	Lyngby			DK
Thellersen; Marianne	Frederiksberg			DK
Svendsen; Allan	Birkeroed			DK
Borch; Kim	Copenhagen			DK
Royer; John C.	Davis	CA		
Kretzschmar; Titus	Vaerloese			DK
Halkier; Torben	Birkeroed			DK
Vind; Jesper	Lyngby			DK
Jorgensen; Steen Troels	Alleroed			DK

US-CL-CURRENT: 435/198; 435/195, 435/196, 435/197

ABSTRACT:

The present invention relates to a modified enzyme with lipolytic activity, a lipolytic enzime capable of removing a substantial amount of fatty matter a one cycle wash, a DNA sequence encoding said enzymes, a vector comprising said DNA sequence, a host cell harbouring said DNA sequence or said vector, and a process for producing said enzymes with lipolytic activity.

63 Claims, 22 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 22

☐ 8. Document ID: US 6410279 B1

L11: Entry 8 of 48 File: USPT Jun 25, 2002

US-PAT-NO: 6410279
DOCUMENT-IDENTIFIER: US 6410279 B1

TITLE: Process for producing optically active azetidine-2-carboxylic acid derivative

DATE-ISSUED: June 25, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kudo; Junko	Ibaraki			JP
Hazama; Motoo	Toyonaka			JP
Hirata; Norihiko	Suita			JP

US-CL-CURRENT: 435/121; 435/198, 435/280

ABSTRACT:

There is provided a process for producing N-substituted azetidine-2-carboxylic acid of the formula I: ##STR1##

wherein R.sup.1 denotes an aralkyl group or an arylated lower alkoxycarbonyl group and * designates an asymmetric carbon atom, which is characterized by:

reacting an N-substituted azetidine-2-carboxylic acid ester of the formula II: ##STR2##

wherein R.sup.1 has the same meaning as defined above and R.sup.2 denotes an alkyl group, an aralkyl group or an allyl group, with an enzyme capable of selectively hydrolyzing a stereoisomer based on the carbon atom of the 2-position of the azetidine ring.

8 Claims, 0 Drawing figures
Exemplary Claim Number: 1

☐ 9. Document ID: US 6326182 B1

L11: Entry 9 of 48 File: USPT Dec 4, 2001

US-PAT-NO: 6326182
DOCUMENT-IDENTIFIER: US 6326182 B1

TITLE: Isolated human lipase proteins, nucleic acid molecules encoding human lipase proteins, and uses thereof

DATE-ISSUED: December 4, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Webster; Marion	San Francisco	CA		
Beasley; Ellen M.	Darnestown	MD		
Di Francesco; Valentina	Rockville	MD		

US-CL-CURRENT: 435/198; 435/252.3, 435/320.1, 435/6, 536/23.2 .

ABSTRACT:

The present invention provides acid sequences of peptides that are encoded by genes within the human genome, the lipase peptides of the present invention. The present invention specifically provides isolated peptide and nucleic acid molecules, methods of identifying orthologs and paralogs of the lipase peptides, and methods of identifying modulators of the lipase peptides.

10 Claims, 14 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 14

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

☐ 10. Document ID: US 6271006 B1

L11: Entry 10 of 48 File: USPT Aug 7, 2001

US-PAT-NO: 6271006
DOCUMENT-IDENTIFIER: US 6271006 B1

TITLE: Enzymatic process for the manufacture of ascorbic acid, 2-keto-L-gulonic acid and esters of 2-keto-L-gulonic acid

DATE-ISSUED: August 7, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY

Hubbs; John Clark Kingsport TN

US-CL-CURRENT: 435/135; 435/138, 435/196, 435/198

ABSTRACT:

The present invention is directed toward efficient, high-yield processes for making ascorbic acid, 2-keto-L-gulonic acid, and esters of 2-keto-L-gulonic acid. The processes comprise reacting the appropriate starting materials with a hydrolase enzyme catalyst such as a protease, an esterase, a lipase or an amidase.

6 Claims, 0 Drawing figures
Exemplary Claim Number: 1

☐ 11. Document ID: US 6239330 B1

L11: Entry 11 of 48 File: USPT May 29, 2001

US-PAT-NO: 6239330
DOCUMENT-IDENTIFIER: US 6239330 B1

TITLE: Fumonisin detoxification compositions and methods

DATE-ISSUED: May 29, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Duvick; Jonathan	Des Moines	IA		
Maddox; Joyce R.	Des Moines	IA		
Wang; Xun	Johnston	IA		

US-CL-CURRENT: 800/279; 435/196, 435/419, 435/468, 435/69.1, 536/23.2, 536/23.7, 536/24.1, 800/278, 800/288, 800/295, 800/298, 800/320, 800/320.1, 800/320.2

ABSTRACT:

Methods for identifying organisms capable of degrading fumonisin. Fumonisin can be incorporated into culture medium for selection of organisms resistant to fumonisin and/or capable of growing on fumonisin as a sole carbon source. Using this method, several organisms have been identified. These organisms can be used to isolate the enzymes and the genes responsible for conferring fumonisin-resistance. The gene can be cloned and inserted into a suitable expression vector so that the protein can be further characterized. Additionally, the DNA encoding for fumonisin degrading enzymes can be used to transform plant cells normally susceptible to Fusarium or other toxin-producing fungus infection. Plants can be regenerated from the transformed plant cells. In this way, a transgenic plant can be produced with the capability of degrading fumonisin, as well as with the capability of producing the degrading enzymes. Methods for detoxification in grain, grain processing, silage, food crops and in animal feed and rumen microbes are also disclosed.

10 Claims, 6 Drawing figures

Exemplary Claim Number: 1
Number of Drawing Sheets: 6

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWMC | Draw D

☐ 12. Document ID: US 6229071 B1

L11: Entry 12 of 48 File: USPT May 8, 2001

US-PAT-NO: 6229071
DOCUMENT-IDENTIFIER: US 6229071 B1
**** See image for Certificate of Correction ****

TITLE: Fumonisin detoxification compositions and methods

DATE-ISSUED: May 8, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Duvick; Jonathan	Des Moines	IA		
Maddox; Joyce R.	Des Moines	IA		
Rood; Tracy A.	Johnston	IA		
Wang; Xun	Johnston	IA		

US-CL-CURRENT: 800/301; 435/197, 536/23.7, 800/288, 800/320.1

ABSTRACT:

Methods for identifying organisms capable of degrading fumonisin. Fumonisin can be incorporated into culture medium for selection of organisms resistant to fumonisin and/or capable of growing on fumonisin as a sole carbon source. Using this method, several organisms have been identified. These organisms can be used to isolate the enzymes and the genes responsible for conferring fumonisin-resistance. The gene can be cloned and inserted into a suitable expression vector so that the protein can be further characterized. Additionally, the DNA encoding for fumonisin degrading enzymes can be used to transform plant cells normally susceptible to Fusarium or other toxin-producing fungus infection. Plants can be regenerated from the transformed plant cells. In this way, a transgenic plant can be produced with the capability of degrading fumonisin, as well as with the capability of producing the degrading enzymes. Methods for detoxification in grain, grain processing, silage, food crops and in animal feed and rumen microbes are also disclosed.

28 Claims, 6 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 6

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWMC | Draw D

☐ 13. Document ID: US 6218167 B1

L11: Entry 13 of 48 File: USPT Apr 17, 2001

US-PAT-NO: 6218167
DOCUMENT-IDENTIFIER: US 6218167 B1

TITLE: Stable biocatalysts for ester hydrolysis

DATE-ISSUED: April 17, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Allen; Larry	Northfield	IL		
Aikens; John	LaGrange Park	IL		
DeMirjian; David	Chicago	IL		
Vonstein; Veronika	Chicago	IL		
Fonstein; Michael	Chicago	IL		
Casadaban; Malcolm	Chicago	IL		

US-CL-CURRENT: 435/252.3; 435/196, 435/252.33, 435/320.1, 536/23.2

ABSTRACT:

The instant invention encompasses isolated stable esterase enzymes characterized by the ability to remain stable at certain temperatures, substrate specificities, and activity profile; the expression vectors which can express, nucleic acids which encode for, and corresponding protein amino acid sequence of such proteins.

4 Claims, 60 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 55

☐ 14. Document ID: US 6218163 B1

L11: Entry 14 of 48 File: USPT Apr 17, 2001

US-PAT-NO: 6218163
DOCUMENT-IDENTIFIER: US 6218163 B1

TITLE: Stable biocatalysts for ester hydrolysis

DATE-ISSUED: April 17, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Allen; Larry	Northfield	IL		
Aikens; John	LaGrange Park	IL		
Demirjian; David	Chicago	IL		
Vonstein; Veronika	Chicago	IL		
Fonstein; Michael	Chicago	IL		
Casadaban; Malcolm	Chicago	IL		

US-CL-CURRENT: 435/197; 435/196, 435/252.3, 435/320.1, 435/826, 435/832, 435/839, 435/849, 530/350, 536/23.2

ABSTRACT:

The instant invention encompasses isolated stable esterase enzymes characterized by the ability to remain stable at certain temperatures, substrate specificities, and activity profile.

3 Claims, 60 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 53

☐ 15. Document ID: US 6140475 A

L11: Entry 15 of 48 File: USPT Oct 31, 2000

US-PAT-NO: 6140475
DOCUMENT-IDENTIFIER: US 6140475 A
**** See image for Certificate of Correction ****

TITLE: Controlled dissolution crosslinked protein crystals

DATE-ISSUED: October 31, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Margolin; Alexey L.	Newton	MA		
Persichetti; Rose A.	Stow	MA		
St. Clair; Nancy L.	Durham	NC		
Khalaf; Nazer K.	Worcester	MA		

US-CL-CURRENT: 530/402; 424/94.1, 435/174, 435/188, 435/195, 435/198, 435/219, 435/262.5, 435/41, 436/518, 510/530, 530/810

ABSTRACT:

Protein crystals crosslinked with a multifunctional crosslinking agent are produced that have the ability to change from an insoluble and stable form to a soluble and active form and to release protein activity at a controlled rate when a change in environment surrounding the crystals occurs. The change in environment may be a change in temperature, pH, chemical composition or shear force acting on the crystals, or a change from a concentrate to a dilute form, or a combination of the changes. The crosslinked protein crystals have a half-life activity under storage conditions greater than at least 2 times that of the soluble protein that is crystallized to form the crystals that are crosslinked, and under conditions of use have an activity similar to the soluble protein. Crosslinking is carried out by reacting a slurry of protein crystals with a multifunctional crosslinking agent such as glutaraldehyde, glyoxal, octanedialdehyde or succinaldehyde using a concentration of crosslinking agent and time for crosslinking that provides crosslinked protein crystals having the desired ability to change due to a change

in environment. An epoxide multifunctional crosslinking agent may be used in combination with glutaraldehyde for crosslinking. The crosslinked protein crystals can be used for protein delivery, and may be used in cleaning agents such as detergents, pharmaceutical compositions, vaccines, personal care compositions, veterinary compositions, foods, feeds, diagnostics and decontamination formulations. Proteins used include enzymes and therapeutic or prophylactic proteins such as hormones and antibodies.

19 Claims, 9 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 9

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

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☐ 16. Document ID: US 6136575 A

L11: Entry 16 of 48 File: USPT Oct 24, 2000

US-PAT-NO: 6136575
DOCUMENT-IDENTIFIER: US 6136575 A
**** See image for Certificate of Correction ****

TITLE: Enzymatic process for the manufacture of ascorbic acid, 2-keto-L-gulonic acid and esters of 2-keto-L-gulonic acid

DATE-ISSUED: October 24, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hubbs; John Clark	Kingsport	TN		

US-CL-CURRENT: 435/135; 435/195, 435/198

ABSTRACT:

The present invention is directed toward efficient, high-yield processes for making ascorbic acid, 2-keto-L-gulonic acid, and esters of 2-keto-L-gulonic acid. The processes comprise reacting the appropriate starting materials with a hydrolase enzyme catalyst such as a protease, an esterase, a lipase or an amidase.

4 Claims, 0 Drawing figures
Exemplary Claim Number: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

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☐ 17. Document ID: US 6121032 A

L11: Entry 17 of 48 File: USPT Sep 19, 2000

US-PAT-NO: 6121032
DOCUMENT-IDENTIFIER: US 6121032 A

**** See image for Certificate of Correction ****

TITLE: Compositions and processes useful for treatment of macerated foodstuff waste products especially useful in conjunction with a garbage disposal apparatus

DATE-ISSUED: September 19, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cooney, Jr.; Edward Matthew	West Orange	NJ		

US-CL-CURRENT: 435/198; 435/201, 435/209, 435/219, 435/252.1

ABSTRACT:

Compositions and processes useful for the treatment of macerated foodstuff waste products, particularly foodstuff waste solids macerated by a garbage disposal apparatus. The compositions comprise per gram:

0-50%wt. bacteria complex;

75-99.99%wt. of an enzyme mixture containing:

at least 5.times.10.sup.3 CDU/gram protease enzymes;

at least 1.2.times.10.sup.4 MWU/gram amylase enzymes;

at least 1.times.10.sup.2 LU/gram lipase enzymes;

at least 1.times.10.sup.3 CU/gram cellulase enzymes;

0-50%wt. of a preservative constituent, preferably propylene glycol;

0-50%wt. of one or more nonionic surfactants;

0-10%wt. of one or more optional constituents, selected from: coloring agents, fragrancing compositions, odor neutralizing compositions, micronutrients, pH adjusting agents, thickening agents.

9 Claims, 0 Drawing figures
Exemplary Claim Number: 1

☐ 18. Document ID: US 6042824 A

L11: Entry 18 of 48 File: USPT Mar 28, 2000

US-PAT-NO: 6042824
DOCUMENT-IDENTIFIER: US 6042824 A
**** See image for Certificate of Correction ****

TITLE: Methods using cross linked protein crystal formulations as catalysts in organic solvents

DATE-ISSUED: March 28, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Khalaf; Nazer K.	Worcester	MA		

US-CL-CURRENT: 424/94.6; 424/94.2, 424/94.3, 424/94.5, 435/183, 435/188, 435/188.5, 435/195, 514/2, 514/4

ABSTRACT:

The present invention relates to the application of biocatalysis technology for performing selective chemical reactions. In one embodiment, this invention relates to crosslinked protein crystal formulations and their use as catalysts in chemical reactions involving organic solvents. This invention also provides methods for producing crosslinked protein crystal formulations and methods using them to optimize chemical reactions in organic solvents, including those used in industrial scale chemical processes.

9 Claims, 0 Drawing figures
Exemplary Claim Number: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWMC | Draw. De

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☐ 19. Document ID: US 6025188 A

L11: Entry 19 of 48 File: USPT Feb 15, 2000

US-PAT-NO: 6025188
DOCUMENT-IDENTIFIER: US 6025188 A
**** See image for Certificate of Correction ****

TITLE: Fumonisin detoxification compositions and methods

DATE-ISSUED: February 15, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Duvick; Jonathan	Des Moines	IA		
Maddox; Joyce R.	Des Moines	IA		
Rood; Tracy A.	Johnston	IA		
Wang; Xun	Johnston	IA		
Bowen; Benjamin A.	Des Moines	IA		
Gilliam; Jacob T.	Norwalk	IA		

US-CL-CURRENT: 435/267; 426/44, 426/52, 426/53, 435/135, 435/136, 435/197, 435/262

ABSTRACT:

Methods for identifying organisms capable of degrading fumonisin. Fumonisin can be incorporated into culture medium for selection of organisms resistant to fumonisin and/or capable of growing on fumonisin as a sole carbon source. Using this method,

several organisms have been identified. These organisms can be used to isolate the enzymes and the genes responsible for conferring fumonisin-resistance. The gene can be cloned and inserted into a suitable expression vector so that the protein can be further characterized. Additionally, the DNA encoding for fumonisin degrading enzymes can be used to transform plant cells normally susceptible to Fusarium or other toxin-producing fungus infection. Plants can be regenerated from the transformed plant cells. In this way, a transgenic plant can be produced with the capability of degrading fumonisin, as well as with the capability of producing the degrading enzymes. Methods for detoxification in grain, grain processing, silage, food crops and in animal feed and rumen microbes are also disclosed.

13 Claims, 6 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 6

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWMC | Draw. D

☐ 20. Document ID: US 6022719 A

L11: Entry 20 of 48 File: USPT Feb 8, 2000

US-PAT-NO: 6022719
DOCUMENT-IDENTIFIER: US 6022719 A
**** See image for Certificate of Correction ****

TITLE: Enzymatic process for the manufacture of ascorbic acid, 2-keto-L-gulonic acid and esters of 2-keto-L-gulonic acid

DATE-ISSUED: February 8, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hubbs; John Clark	Kingsport	TN		

US-CL-CURRENT: 435/138; 435/135, 435/195, 435/197, 435/219

ABSTRACT:

The present invention is directed toward efficient, high-yield processes for making ascorbic acid, 2-keto-L-gulonic acid, and esters of 2-keto-L-gulonic acid. The processes comprise reacting the appropriate starting materials with a hydrolase enzyme catalyst such as a protease, an esterase, a lipase or an amidase.

4 Claims, 0 Drawing figures
Exemplary Claim Number: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWMC | Draw. D

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☐ 21. Document ID: US 6011001 A

Using default format because multiple data bases are involved.

L11: Entry 21 of 48 File: USPT Jan 4, 2000

US-PAT-NO: 6011001
DOCUMENT-IDENTIFIER: US 6011001 A

TITLE: Method of protein therapy by orally administering crosslinked protein crystals

DATE-ISSUED: January 4, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Navia; Manuel A.	Lexington	MA		
St. Clair; Nancy L.	Charlestown	MA		

US-CL-CURRENT: 514/2; 424/94.1, 424/94.6, 424/94.63, 435/109, 435/174, 435/195, 435/198, 435/212, 435/218, 435/41, 435/817, 436/518, 530/402, 530/413, 530/810

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

☐ 22. Document ID: US 6004768 A

L11: Entry 22 of 48 File: USPT Dec 21, 1999

US-PAT-NO: 6004768
DOCUMENT-IDENTIFIER: US 6004768 A

TITLE: Biosensors, extracorporeal devices and methods for detecting substances using crosslinked protein crystals

DATE-ISSUED: December 21, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Navia; Manuel A.	Lexington	MA		
St. Clair; Nancy L.	Charlestown	MA		

US-CL-CURRENT: 435/18; 424/159.1, 424/164.1, 424/178.1, 424/179.1, 424/94.1, 424/94.6, 424/94.63, 435/109, 435/174, 435/19, 435/195, 435/198, 435/212, 435/218, 435/23, 435/287.1, 435/287.2, 435/289.1, 435/41, 435/7.1, 435/817, 436/518, 514/2,

530/402, 530/413, 530/810

ABSTRACT:

Proteins such as enzymes and antibodies are immobilized by crosslinking crystals of the proteins such as microcrystals having a cross-section of 10.sup.-1 mm or less with a multifunctional crosslinking agent. The crosslinked protein crystals may be lyophilized for storage. Crystals of an enzyme such as thermolysin, elastase, asparaginase, lysozyme, lipase or urease may be crosslinked to provide crosslinked enzyme crystals that retain at least 91% activity after incubation for three hours in the presence of a concentration of Pronase.TM. that causes the soluble uncrosslinked form of the enzyme to lose at least 94% of its initial activity under the same conditions. A preferred Pronase.TM.:enzyme ratio is 1:40. Crosslinked enzyme or antibody crystals may be used in an assay, diagnostic kit or biosensor for detecting an analyte, in an extracorporeal device for altering a component of a fluid, in producing a product such as using crosslinked thermolysin crystals to produce aspartame, in separating a substance from a mixture, and in therapy.

32 Claims, 19 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 19

☐ 23. Document ID: US 5976529 A

L11: Entry 23 of 48 File: USPT Nov 2, 1999

US-PAT-NO: 5976529
DOCUMENT-IDENTIFIER: US 5976529 A

TITLE: Methods of enzyme therapy by orally administering crosslinked enzyme crystals

DATE-ISSUED: November 2, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Navia; Manuel A.	Lexington	MA		
St. Clair; Nancy L.	Charlestown	MA		

US-CL-CURRENT: 424/94.6; 424/94.1, 424/94.63, 435/109, 435/174, 435/195, 435/198, 435/212, 435/218, 435/41, 435/817, 436/518, 530/402, 530/413, 530/810

ABSTRACT:

A protein such as an enzyme or antibody is immobilized by crosslinking crystals of the protein with a multifunctional crosslinking agent. The crosslinked protein crystals may be lyophilized for storage. A preferred protein is an enzyme such as thermolysin, elastase, asparaginase, lysozyme, lipase or urease. Crosslinked enzyme crystals preferably retain at least 91% activity after incubation for three hours in the presence of a concentration of Pronase.TM. that causes the soluble uncrosslinked form of the enzyme to lose at least 94% of its initial activity under the same conditions. A preferred enzyme:Pronase.TM. ratio is 1:40. Enzyme crystals

that are crosslinked may be microcrystals having a cross-section of 10.sup.-1 mm or less. Crosslinked enzyme or antibody crystals may be used in an assay, diagnostic kit or biosensor for detecting an analyte, in an extracorporeal device for altering a component of a fluid, in producing a product such as using crosslinked thermolysin crystals to produce aspartame and in separating a substance from a mixture. Enzyme therapy such as lipase therapy can be performed by administering orally crosslinked lipase crystals.

8 Claims, 19 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 19

☐ 24. Document ID: US 5969121 A

L11: Entry 24 of 48 File: USPT Oct 19, 1999

US-PAT-NO: 5969121
DOCUMENT-IDENTIFIER: US 5969121 A

TITLE: Stable biocatalysts for ester hydrolysis

DATE-ISSUED: October 19, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Allen; Larry	Northfield	IL		
Aikens; John	LaGrange Park	IL		
Fonstein; Michael	Chicago	IL		
Vonstein; Veronika	Chicago	IL		
Demirjian; David	Chicago	IL		
Casadaban; Malcolm	Chicago	IL		

US-CL-CURRENT: 536/23.1; 435/19, 435/196, 435/69.1, 536/23.2

ABSTRACT:

The instant invention encompasses isolated stable esterase enzymes characterized by the ability to remain stable at certain temperatures, substrate specificities, and activity profile.

12 Claims, 121 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 47

☐ 25. Document ID: US 5945325 A

L11: Entry 25 of 48 File: USPT Aug 31, 1999

US-PAT-NO: 5945325
DOCUMENT-IDENTIFIER: US 5945325 A

TITLE: Thermally stable para-nitrobenzyl esterases

DATE-ISSUED: August 31, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Arnold; Frances H.	Pasadena	CA		
Giver; Lorraine J.	Pasadena	CA		

US-CL-CURRENT: 435/197; 536/23.2

ABSTRACT:

A method for isolating and identifying modified para-nitrobenzyl esterases which exhibit improved thermal stability relative to naturally occurring para-nitrobenzyl esterase. The method involves preparing a library of modified para-nitrobenzyl esterase nucleic acid segments (genes) which have nucleotide sequences that differ from the nucleic acid segment which encodes for naturally occurring para-nitrobenzyl esterase. The library of modified para-nitrobenzyl nucleic acid segments is expressed to provide a plurality of modified enzymes. The clones expressing modified enzymes are then screened to identify which enzymes retain esterase activity after heat treatment at elevated temperature. Specific modified para-nitrobenzyl esterases are disclosed which have improved thermal stability and/or ester hydrolysis activity in aqueous or aqueous-organic media relative to the thermal stability and/or ester hydrolysis activity of unmodified naturally occurring para-nitrobenzyl esterase.

15 Claims, 58 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 48

☐ 26. Document ID: US 5919746 A

L11: Entry 26 of 48 File: USPT Jul 6, 1999

US-PAT-NO: 5919746
DOCUMENT-IDENTIFIER: US 5919746 A

TITLE: Alkaline lipolytic enzyme

DATE-ISSUED: July 6, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hirayama; Satoshi	Chiba			JP

Halkier; Torben Birkeroed DK

US-CL-CURRENT: 510/392; 435/198, 510/320, 510/321, 510/393

ABSTRACT:

The present invention relates to an alkaline lipolytic enzyme derivable from a strain of Botryosphaeria or Guignardia, to a lipolytic enzyme-producing microbial strain, to methods for the production of lipolytic enzyme and to a detergent composition comprising the lipolytic enzyme.

9 Claims, 2 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 2

☐ 27. Document ID: US 5906930 A

L11: Entry 27 of 48 File: USPT May 25, 1999

US-PAT-NO: 5906930
DOCUMENT-IDENTIFIER: US 5906930 A

TITLE: Para-nitrobenzyl esterases with enhanced activity in aqueous and nonaqueous media

DATE-ISSUED: May 25, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Arnold; Frances H.	Pasadena	CA		
Moore; Jeffrey C.	Pasadena	CA		

US-CL-CURRENT: 435/197; 435/252.3, 435/252.33, 435/320.1, 435/69.1, 435/71.2, 536/23.2

ABSTRACT:

A method for isolating and identifying modified para-nitrobenzyl esterases which exhibit improved stability and/or esterase hydrolysis activity toward selected substrates and under selected reaction conditions relative to the unmodified para-nitrobenzyl esterase. The method involves preparing a library of modified para-nitrobenzyl esterase nucleic acid segments (genes) which have nucleotide sequences that differ from the nucleic acid segment which encodes for unmodified para-nitrobenzyl esterase. The library of modified para-nitrobenzyl nucleic acid segments is expressed to provide a plurality of modified enzymes. The clones expressing modified enzymes are then screened to identify which enzymes have improved esterase activity by measuring the ability of the enzymes to hydrolyze the selected substrate under the selected reaction conditions. Specific modified para-nitrobenzyl esterases are disclosed which have improved stability and/or ester hydrolysis activity in aqueous or aqueous-organic media relative to the stability and/or ester hydrolysis activity of unmodified naturally occurring para-nitrobenzyl

esterase.

20 Claims, 43 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 33

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 28. Document ID: US 5905037 A

L11: Entry 28 of 48 File: USPT May 18, 1999

US-PAT-NO: 5905037
DOCUMENT-IDENTIFIER: US 5905037 A
**** See image for Certificate of Correction ****

TITLE: Liquid septic tank treatment composition

DATE-ISSUED: May 18, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cooney, Jr.; Edward Matthew	West Orange	NJ		
Smialowicz; Dennis Thomas	Waldwick	NJ		
Tobey, Jr.; James F.	Salem	VA	24153	
Jiminez; Luiz	Hackensack	NJ		

US-CL-CURRENT: 435/264; 210/601, 210/632, 435/187, 435/188

ABSTRACT:

Aqueous septic tank maintenance compositions, process for their production, methods for their use as well as methods for the maintenance of sewage systems, particularly septic tanks and cesspools are provided. The aqueous septic tank maintenance compositions feature a high proportion of biologically active agents per unit volume or unit weight of the compositions, and reduced numbers of stabilizing compositions generally required to ensure storage and shelf stability of the biologically active agents contained therein. Processes for the production of these aqueous septic tank maintenance compositions, and methods for their use are also disclosed.

13 Claims, 1 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 29. Document ID: US 5849296 A

L11: Entry 29 of 48 File: USPT Dec 15, 1998

US-PAT-NO: 5849296
DOCUMENT-IDENTIFIER: US 5849296 A

TITLE: Crosslinked protein crystals

DATE-ISSUED: December 15, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Navia; Manuel A.	Lexington	MA		
St. Clair; Nancy L.	Charlestown	MA		

US-CL-CURRENT: 424/178.1; 424/159.1, 424/164.1, 424/179.1, 424/94.1, 424/94.6, 424/94.63, 435/109, 435/174, 435/195, 435/198, 435/212, 435/218, 435/41, 435/817, 436/518, 514/2, 530/402, 530/413, 530/810

ABSTRACT:

A protein such as an enzyme or antibody is immobilized by crosslinking crystals of the protein with a multifunctional crosslinking agent. The crosslinked protein crystals may be lyophilized for storage. A preferred protein is an enzyme such as thermolysin, elastase, asparaginase, lysozyme, lipase or urease. Crosslinked enzyme crystals preferably retain at least 91% activity after incubation for three hours in the presence of a concentration of Pronase.TM. that causes the soluble uncrosslinked form of the enzyme to lose at least 94% of its initial activity under the same conditions. A preferred enzyme:Pronase.TM. ratio is 1:40. Enzyme crystals that are crosslinked may be microcrystals having a cross-section of 10.sup.-1 mm or less. Crosslinked enzyme or antibody crystals may be used in an assay, diagnostic kit or biosensor for detecting an analyte, in an extracorporeal device for altering a component of a fluid, in producing a product such as using crosslinked thermolysin crystals to produce aspartame, in separating a substance from a mixture, and in therapy.

15 Claims, 19 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 19

☐ 30. Document ID: US 5830735 A

L11: Entry 30 of 48 File: USPT Nov 3, 1998

US-PAT-NO: 5830735
DOCUMENT-IDENTIFIER: US 5830735 A

TITLE: Method for producing lipolytic enzymes using transformed Pseudomonas

DATE-ISSUED: November 3, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Andreoli; Peter Michael	Bellegem-Kortrijk			BE

Cox; Maria Mathilde Josphina	Delft	NL
Farin; Farrokh	Hazerswoude-Rijndijk	NL
Wohlfarth-Rippel; Suzanne	Dortmund	DE

US-CL-CURRENT: 435/198; 435/253.3, 435/69.1, 435/874

ABSTRACT:

Novel microbial host strains are provided which are transformed by a vector molecule comprising a DNA fragment encoding a lipolytic enzyme and a marker for selection, capable of producing active lipase. Said DNA fragment is preferably derived from a Pseudomonas species.

7 Claims, 22 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 24

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

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☐ 31. Document ID: US 5817490 A

L11: Entry 31 of 48 File: USPT Oct 6, 1998

US-PAT-NO: 5817490
DOCUMENT-IDENTIFIER: US 5817490 A
**** See image for Certificate of Correction ****

TITLE: Enzymatic process for the manufacture of ascorbic acid 2-keto-L-gulonic acid and esters of 2-keto-L-gulonic acid

DATE-ISSUED: October 6, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hubbs; John Clark	Kingsport	TN		

US-CL-CURRENT: 435/137; 435/195, 435/197, 435/219, 435/252.3, 435/836, 435/847, 435/913, 435/921, 435/933, 536/23.2

ABSTRACT:

The present invention is directed toward efficient, high-yield processes for making ascorbic acid, 2-keto-L-gulonic acid, and esters of 2-keto-L-gulonic acid. The processes comprise reacting the appropriate starting materials with a hydrolase enzyme catalyst such as a protease, an esterase, a lipase or an amidase.

21 Claims, 0 Drawing figures
Exemplary Claim Number: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

☐ 32. Document ID: US 5801022 A

L11: Entry 32 of 48 File: USPT Sep 1, 1998

US-PAT-NO: 5801022
DOCUMENT-IDENTIFIER: US 5801022 A

TITLE: Method of producing a product with crosslinked crystals of thermolysin

DATE-ISSUED: September 1, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Navia; Manuel A.	Lexington	MA		
St. Clair; Nancy L.	Charlestown	MA		

US-CL-CURRENT: 435/108; 424/94.1, 424/94.6, 424/94.63, 435/109, 435/174, 435/195, 435/198, 435/212, 435/218, 435/41, 436/518, 530/402, 530/413, 530/810

ABSTRACT:

A protein such as an enzyme or antibody is immobilized by crosslinking crystals of the protein with a multifunctional crosslinking agent such as glutaraldehyde, and if desired lyophilizing the crosslinked crystals for storage. Crosslinking of the protein crystals provides stabilization for use under harsh conditions and for lyophilizing. The crystals crosslinked may be microcrystals having a cross-section of 10.sub.-1 mm or less. Crosslinked thermolysin, esterase, elastase, asparaginase and lysozyme crystals and crosslinked crystals of lipase from Geotrichum candidum and Candida cylindracea and of porcine origin can be used to convert a substrate to a product. Crosslinked thermolysin crystals are prepared that retain at least 96% of their initial activity after incubation for 4 days in the presence of a concentration of Pronase.TM. such as a thermolysin:Pronase.TM. ratio of 1:40 that causes the soluble uncrosslinked form of thermolysin that is crystallized to form the crystals that are crosslinked to lose at least 99% of its initial activity after incubation for 90 minutes under the same conditions. Crosslinked thermolysin crystals can be used to produce aspartame by combining the crystals with N-(benzyloxycarbonyl)-L-aspartic acid and L-phenylalanine methyl ester in a mixed aqueous/organic solvent such as a water-ethyl acetate mixture, and maintaining the combination under conditions to cause a condensation reaction to produce N-(benzyloxycarbonyl)-L-aspartyl-L-phenylalanine methyl ester, and removing the benzyloxycarbonyl group to obtain aspartame. Crosslinked antibody crystals have uses as an immunospecific reagent such as for detection of a substance in a sample, and for therapeutic purposes.

25 Claims, 10 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 10

☐ 33. Document ID: US 5741691 A

L11: Entry 33 of 48 File: USPT Apr 21, 1998

US-PAT-NO: 5741691
DOCUMENT-IDENTIFIER: US 5741691 A

TITLE: Para-nitrobenzyl esterases with enhanced activity in aqueous and nonaqueous media

DATE-ISSUED: April 21, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Arnold; Frances H.	Pasadena	CA		
Moore; Jeffrey C.	Pasadena	CA		

US-CL-CURRENT: 435/197; 435/252.3, 435/252.33, 435/320.1, 435/69.1, 435/71.2, 536/23.2

ABSTRACT:

A method for isolating and identifying modified para-nitrobenzyl esterases which exhibit improved stability and/or esterase hydrolysis activity toward selected substrates and under selected reaction conditions relative to the unmodified para-nitrobenzyl esterase. The method involves preparing a library of modified para-nitrobenzyl esterase nucleic acid segments (genes) which have nucleotide sequences that differ from the nucleic acid segment which encodes for unmodified para-nitrobenzyl esterase. The library of modified para-nitrobenzyl nucleic acid segments is expressed to provide a plurality of modified enzymes. The clones expressing modified enzymes are then screened to identify which enzymes have improved esterase activity by measuring the ability of the enzymes to hydrolyze the selected substrate under the selected reaction conditions. Specific modified para-nitrobenzyl esterases are disclosed which have improved stability and/or ester hydrolysis activity in aqueous or aqueous-organic media relative to the stability and/or ester hydrolysis activity of unmodified naturally occurring para-nitrobenzyl esterase.

12 Claims, 43 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 33

☐ 34. Document ID: US 5739016 A

L11: Entry 34 of 48 File: USPT Apr 14, 1998

US-PAT-NO: 5739016
DOCUMENT-IDENTIFIER: US 5739016 A

TITLE: Enzymatic hydrolysis method for the preparation of C-13 hydroxyl-bearing taxanes, and use thereof in the preparation of C-13 acyloxy-bearing taxanes

DATE-ISSUED: April 14, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hanson; Ronald L.	Morris Plains	NJ		
Patel; Ramesh N.	Bridgewater	NJ		
Szarka; Laszlo J.	East Brunswick	NJ		

US-CL-CURRENT: 435/117; 435/123, 435/195

ABSTRACT:

An enzymatic hydrolysis method for the preparation of compounds useful as intermediates in the preparation of taxanes such as taxol, wherein one or more C-13 acyloxy-bearing taxanes are contacted with an enzyme or microorganism capable of hydrolyzing said acyloxy groups to hydroxyl groups.

10 Claims, 0 Drawing figures
Exemplary Claim Number: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 35. Document ID: US 5658769 A

L11: Entry 35 of 48 File: USPT Aug 19, 1997

US-PAT-NO: 5658769
DOCUMENT-IDENTIFIER: US 5658769 A

TITLE: Process for the esterification of carboxylic acids with tertiary alcohols using a lipase from Candida antarctica

DATE-ISSUED: August 19, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bosley; John Anthony	Kettering			GB3
Casey; John	Wellingborough			GB3
Macrae; Alasdair Robin	Newton Blossomville			GB3
MyCock; Gary	Higham Ferrers			GB3

US-CL-CURRENT: 435/135; 435/134, 435/174, 435/176, 435/177, 435/180, 435/198

ABSTRACT:

Esters in which the alcohol part is sterically hindered around the ester bond, i.e. derived from tertiary alcohols are enzymatically prepared under low water conditions using Candida antarctica lipase A or a lipase species having a substrate activity similar to that of Candida antarctica lipase A with respect to tertiary alcohol esters.

9 Claims, 0 Drawing figures
Exemplary Claim Number: 1

☐ 36. Document ID: US 5618710 A

L11: Entry 36 of 48 File: USPT Apr 8, 1997

US-PAT-NO: 5618710
DOCUMENT-IDENTIFIER: US 5618710 A
**** See image for Certificate of Correction ****

TITLE: Crosslinked enzyme crystals

DATE-ISSUED: April 8, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Navia; Manuel A.	Lexington	MA		
St. Clair; Nancy L.	Charlestown	MA		

US-CL-CURRENT: 435/174; 424/94.1, 424/94.6, 424/94.63, 435/109, 435/195, 435/198, 435/212, 435/218, 435/41, 435/817, 436/518, 530/413, 530/810

ABSTRACT:

A protein such as an enzyme of antibody is immobilized by crosslinking crystals of the protein with a multifunctional crosslinking agent. The crosslinked protein crystals may be lyophilized for storage. A preferred protein is an enzyme such as thermolysin, elastase, asparaginase, lysozyme, lipase or urease. Crosslinked enzyme crystals preferably retain at least 91% activity after incubation for three hours in the presence of a concentration of Pronase.TM. that causes the soluble uncrosslinked form of the enzyme to lose at least 94% of its initial activity under the same conditions. A preferred enzyme:Pronase.TM. ratio is 1:40. Enzyme crystals that are crosslinked may be microcrystals having a cross-section of 10.sup.-1 mm or less. Crosslinked enzyme or antibody crystals may be used in an assay, diagnostic kit or biosensor for detecting an analyte, in an extracorporeal device for altering a component of a fluid, in producing a product such as using crosslinked thermolysin crystals to produce aspartame, in separating a substance from a mixture, and in therapy.

13 Claims, 19 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 19

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw. D

☐ 37. Document ID: US 5529917 A

L11: Entry 37 of 48 File: USPT Jun 25, 1996

US-PAT-NO: 5529917
DOCUMENT-IDENTIFIER: US 5529917 A

TITLE: Compositions and methods for making lipolytic enzymes

DATE-ISSUED: June 25, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Andreoli; Peter M.	Rotterdam			NL
Cox; Maria M. J.	Amsterdam			NL
Farin; Farrokh	Hazerswoude-Rijndijk			NL
Wohlfarth-Rippel; Suzanne	Dortmund			DE

US-CL-CURRENT: 435/198; 435/252.31, 435/252.33, 435/252.34, 536/23.2

ABSTRACT:

Novel microbial host strains are provided which are transformed by a vector molecule comprising a DNA fragment encoding a lipolytic enzyme and a marker for selection, capable of producing active lipase. Said DNA fragment is preferably derived from a Pseudomonas species.

12 Claims, 26 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 24

☐ 38. Document ID: US 5523219 A

L11: Entry 38 of 48 File: USPT Jun 4, 1996

US-PAT-NO: 5523219
DOCUMENT-IDENTIFIER: US 5523219 A
**** See image for Certificate of Correction ****

TITLE: Enzymatic hydrolysis method for the preparation of C-10 hydroxyl-bearing taxanes and enzymatic esterification method for the preparation of C-10 acyloxy-bearing

DATE-ISSUED: June 4, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hanson; Ronald L.	Morris Plains	NJ		
Patel; Ramesh N.	Bridgewater	NJ		
Szarka; Laszlo J.	East Brunswick	NJ		

US-CL-CURRENT: 435/123; 435/117, 435/195, 435/252.1, 435/253.2

ABSTRACT:

An enzymatic hydrolysis method, wherein one or more C-10 acyloxy-bearing taxanes

are contacted with an enzyme or microorganism capable of hydrolyzing said acyloxy groups to hydroxyl groups. Also provided is an enzymatic esterification method, wherein one or more C-10 hydroxyl-bearing taxanes are contacted with an acylating agent and an enzyme or microorganism capable of esterifying said hydroxyl groups to form acyloxy groups.

24 Claims, 0 Drawing figures
Exemplary Claim Number: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

☐ 39. Document ID: US 5352594 A

L11: Entry 39 of 48 File: USPT Oct 4, 1994

US-PAT-NO: 5352594
DOCUMENT-IDENTIFIER: US 5352594 A

TITLE: Selection and method of making enzymes for perhydrolysis system and for altering substrate specificity, specific activity and catalytic efficiency

DATE-ISSUED: October 4, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Poulouse; Ayrookaran J.	San Bruno	CA		

US-CL-CURRENT: 435/6; 435/198, 435/480, 435/69.1, 435/874, 435/877, 536/23.2

ABSTRACT:

The invention relates to methods of making and selecting esterase enzymes having an improved perhydrolysis to hydrolysis ratio, and varying K.sub.cat, K.sub.m, and K.sub.cat /K.sub.m and substrate specificity. Such enzymes are useful in peracid bleaching systems and other applications.

11 Claims, 0 Drawing figures
Exemplary Claim Number: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

☐ 40. Document ID: US 5308529 A

L11: Entry 40 of 48 File: USPT May 3, 1994

US-PAT-NO: 5308529
DOCUMENT-IDENTIFIER: US 5308529 A

TITLE: System for enhancing release of acids from anhydride precursors using esterase catalysts

DATE-ISSUED: May 3, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kaiserman; Howard B.	Cliffside Park	NJ		
Tallman; Michael T.	Edgewater	NJ		

US-CL-CURRENT: 510/320; 510/321, 510/361, 510/392, 510/393, 510/530, 8/137

ABSTRACT:

The present invention provides a system for releasing an acid from acid precursors using an esterase enzyme (i.e., enzyme having esterase activity) as the activator.

6 Claims, 0 Drawing figures
Exemplary Claim Number: 1

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☐ 41. Document ID: US 5288619 A

Using default format because multiple data bases are involved.

L11: Entry 41 of 48 File: USPT Feb 22, 1994

US-PAT-NO: 5288619
DOCUMENT-IDENTIFIER: US 5288619 A

TITLE: Enzymatic method for preparing transesterified oils

DATE-ISSUED: February 22, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Brown; Peter H.	Morton Grove	IL		
Carvallo; Federico D.	Wheeling	IL		
Dinwoodie; Robert C.	Glenview	IL		
Dueber; Michael T.	Glenview	IL		
Hayashi; David K.	Chicago	IL		
Krishnamurthy; R. G.	Glenview	IL		
Merchant; Zohar M.	Wilmette	IL		
Myrick; James J.	Glencoe	IL		
Silver; Richard S.	Wilmette	IL		
Thomas; Chrisanthus	Arlington, Heights	IL		

US-CL-CURRENT: 435/134; 426/33, 426/601, 426/603, 426/607, 435/137

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 42. Document ID: US 5278066 A

L11: Entry 42 of 48 File: USPT Jan 11, 1994

US-PAT-NO: 5278066
DOCUMENT-IDENTIFIER: US 5278066 A

TITLE: Molecular cloning and expression of gene encoding lipolytic enzyme

DATE-ISSUED: January 11, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Andreoli; Peter M.	Rotterdam			NL
Cox; Maria M. J.	Amsterdam			NL
Farin; Farrokh	Hazerswoude-Rijndijk			NL

US-CL-CURRENT: 435/252.34; 435/198, 435/320.1, 536/23.2

ABSTRACT:

Novel microbial host strains are provided which are transformed by a vector molecule comprising a DNA fragment encoding a lipolytic enzyme and a marker for selection, capable of producing active lipase. Said DNA fragment is preferably derived from a Pseudomonas species.

7 Claims, 22 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 23

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw. D

☐ 43. Document ID: US 5273898 A

L11: Entry 43 of 48 File: USPT Dec 28, 1993

US-PAT-NO: 5273898
DOCUMENT-IDENTIFIER: US 5273898 A

TITLE: Thermally stable and positionally non-specific lipase isolated from Candida

DATE-ISSUED: December 28, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ishii; Michiyo	Sapporo			JP

US-CL-CURRENT: 435/198; 435/134, 435/921

ABSTRACT:

Thermally stable, positionally non-specific lipases native to Candida species of C. antartica, C. tsukubaensis, C. auriculariae, C. humicola, and C. foliarum, are isolated. The lipase of C. antarctica, is preferred. Two lipase activities are elaborated by C. antarctica. One lipase fraction being 43 kD in molecular weight, and of an isoelectric point of about 8.0 and has excellent thermostability. The other fraction being 33 kD in molecular weight and of an isoelectric point of about 6.0 and has high retention of residual activity at pH 10.

21 Claims, 10 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 6

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

☐ 44. Document ID: US 5213968 A

L11: Entry 44 of 48 File: USPT May 25, 1993

US-PAT-NO: 5213968
DOCUMENT-IDENTIFIER: US 5213968 A
**** See image for Certificate of Correction ****

TITLE: Process for preparing emulsifying agents

DATE-ISSUED: May 25, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Castle; Edward R.	Gaylordsville	CT		
Kwon; Steven S.-Y.	New Milford	CT		
Vadehra; Dharam V.	New Milford	CT		

US-CL-CURRENT: 435/68.1; 426/580, 426/589, 426/601, 426/602, 426/605, 426/63, 426/654, 435/134, 435/198, 435/219

ABSTRACT:

Emulsifying agents are prepared by sequentially treating a biological material with a protease and with a lipase. The enzymatically treated biological material may be pasteurized during or following the enzymatic treatment.

23 Claims, 0 Drawing figures
Exemplary Claim Number: 1

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

☐ 45. Document ID: US 5200328 A

L11: Entry 45 of 48 File: USPT Apr 6, 1993

US-PAT-NO: 5200328
DOCUMENT-IDENTIFIER: US 5200328 A

TITLE: Process for producing methyl glycoside esters

DATE-ISSUED: April 6, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kirk; Ole	Copenhagen			DK
Godtfredsen; Sven Erik	Vaerlose			DK
Bjorkling; Fredrik	Helsingborg			SE

US-CL-CURRENT: 435/101; 435/198, 435/219, 435/252.1, 435/252.3, 435/874, 435/931, 536/115, 536/119

ABSTRACT:

Fatty acid esters of methyl glycosides are prepared by reacting a fatty acid or ester with a methyl glycoside in the presence of an enzyme catalyst, in particular a lipase. The resulting fatty acid esters are preferably monoesters.

The methyl glycoside fatty acid esters may be used as surface-active agents in cleaning compositions or personal care products.

11 Claims, 0 Drawing figures
Exemplary Claim Number: 1

☐ 46. Document ID: US 5182203 A

L11: Entry 46 of 48 File: USPT Jan 26, 1993

US-PAT-NO: 5182203
DOCUMENT-IDENTIFIER: US 5182203 A

TITLE: Bifunctional compounds useful in catalyzed reporter deposition

DATE-ISSUED: January 26, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ebersole; Richard C.	Wilmington	DE		
Moran; John R.	Kennett Square	PA		

US-CL-CURRENT: 435/196; 435/174, 435/7.9, 435/964, 436/545, 436/546

ABSTRACT:

Novel bifunctional hydroxyphenylazobenzoic acid analogues (HABA-type and conjugates) and biotin analogues probiotin-type conjugates) useful as reagents in assays employing catalyzed reporter deposition are described as well as intermediates useful in synthesizing these compounds.

2 Claims, 3 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 3

☐ 47. Document ID: US 5108916 A

L11: Entry 47 of 48 File: USPT Apr 28, 1992

US-PAT-NO: 5108916
DOCUMENT-IDENTIFIER: US 5108916 A

TITLE: Process for stereoselectively hydrolyzing, transesterifying or esterifying with immobilized isozyme of lipase from Candida rugosa

DATE-ISSUED: April 28, 1992

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cobbs; Carrington S.	Ellicott City	MD		
Barton; Michael J.	Rockville	MD		
Peng; Lin	Baltimore	MD		
Goswami; Animesh	Columbia	MD		
Malick; Adrien P.	Woodstock	MD		
Hamman; John P.	Baltimore	MD		
Calton; Gary J.	Elkridge	MD		

US-CL-CURRENT: 435/135; 435/134, 435/141, 435/146, 435/147, 435/174, 435/177, 435/180, 435/198, 435/280

ABSTRACT:

An immobilized isozyme of Lipase MY or AY from Candida rugosa is used for stereoselectively hydrolyzing racemic mixtures of esters of 2-substituted acids, other than 2-halo propionic acids, transesterifying esters or acids or esterify acids or alcohols, at high enantiomeric excess, in an organic solvent. Immobilization of the isozyme may be carried out in the presence of an organic acid such as stearic acid. The immobilized isozyme may be used with a fatty acid or fatty acid ester that increases stereoselectivity or rate of hydrolysis of a mixture of racemic esters.

23 Claims, 18 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 9

☐ 48. Document ID: US 5037751 A

L11: Entry 48 of 48 File: USPT Aug 6, 1991

US-PAT-NO: 5037751
DOCUMENT-IDENTIFIER: US 5037751 A

TITLE: Microbial purified esterases

DATE-ISSUED: August 6, 1991

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY

Bertola; Mauro A.	Delft	NL
Marx; Arthur F.	Delft	NL
Koger; Hein S.	Spaarndam	NL
Quax; Wilhelmus J.	Voorschoten	NL
van der Laken; Cornelis J.	Leiden	NL
Phillips; Gareth T.	Sittingbourne	GB
Robertson; Brian W.	Sittingbourne	GB
Watts; Peter D.	Sittingbourne	GB

US-CL-CURRENT: 435/197; 435/136, 435/141, 435/198, 435/280

ABSTRACT:

A process for the preparation of a pharmaceutically active compound in a stereospecific form of the formula ##STR1## or a pharmaceutically acceptable salt or ester thereof, like an alkali metal salt or an alkaline earth metal salt or a pivaloyl ester, wherein R.sub.1 represents an optionally substituted aryl group such as a phenyl or naphthyl group optionally included in a heterocyclic ring system, which is optionally substituted, or represents a heteroaromatic ring system containing in addition to carbon atoms one or more atoms selected from nitrogen, sulphur and oxygen, this ring system being optionally substituted, which comprises subjecting a compound of the formula ##STR2## wherein R.sub.2 is an ester residue and preferably an alkyl group optionally substituted, to the action of a micro-organism having the ability for stereoselective hydrolysis of compound (II) into compound (I), having at least 80% by weight the S-configuration, and if desired converting compound (I) into the pharmaceutically acceptable salt or ester thereof.

5 Claims, 11 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 10

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